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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/646,346	11/15/2000	Mario Pagliaro	PAGLIAR01	9119

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WASHINGTON, DC 20001-5303

EXAMINER

WILSON, JAMES O

ART UNIT	PAPER NUMBER
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1623

DATE MAILED: 07/30/2002

8

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.  
09/646,346

Applicant(s)  
Pagliaro et al.

Examiner  
James O. Wilson

Art Unit  
1623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on AMDT and Ext of Time filed 5-13-02.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13-21 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some\* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

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The following Office Action is filed in response to the Amendment and Remarks filed by applicant on May 13, 2002. The May 13, 2002 Amendments and Remarks were filed in response to the first Office Action dated December 14, 2001. An action on the merits of claims 1-11 and 13-18, as well as newly added claims 19-21 is contained herein below in response to the amendments to claims 1, 3, 4, 5, 10 and 15-18 and the cancellation of claim 12.

Claim 14 is objected to because of the following informalities:

The text of claim 14, specifically the subscripts in the primary oxidants are unclear.

Appropriate correction is required.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 3, 13-17, 19 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 depends from claim 1, and references the product that is made in that process, however, claim 13 fails to further limit the process of claim 1 and should be canceled. Likewise, all of the claims which ultimately depend from claim 13, which are claims 14-17 and 21 are also rejected because these claims also fail to further limit the process of claim 1 and they too should be canceled. Claim 19, which depends from claim 1, as well as claim 3 which now depends from claim 19, lack antecedent basis. The variable "P" is not disclosed in claim 1 to be anything other than "a non-polymerizable group". Claim 1 makes no reference to a single moiety or variable as "non-hydrolyzable".

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Applicant's arguments filed May 13, 2002 have been fully considered but they are not persuasive.

The rejection of claim 3 and newly added claim 19 is maintained since the original claims nor the specification is seen to define the variable "P" as "a non-hydrolyzable substituent, group or moiety". The rejections of claims 13-17 and 21 is newly cited.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-11, 18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Avnir et al. Patent of record, 5,292,801 in combination with the Matsui et al. Reference, J. Of Sol-Gel Science and Technology, Vol. 9, pages 273-277 (1997) newly cited.

Claim 1 is drawn to a process for preparing a reactive sol gel catalytic porous material doped with stable organic nitroxyl radicals comprising:

a) copolymerizing a solution

(Solution comprising at least one monomer which is metal or semi-metal alkoxides, a dopant, a solvent, an acid or base to Catalyze the copolymerization, any other additives useful in preparation of porous materials) ;

b) evaporating the solvent (removing the solvent) ;

c) drying said gel ;

d) coating a porous material (support) with said sol-gel ; and

e) drying said col-gel onto a porous material (support) .

Dependent claim 2 limits the identity of the metal component of the copolymerizing solution and claim 3 lacks antecedent basis. Claims 4 and 5 delimit the drying step designated © in claim 1. Claim 6 delimits pre-mixing the monomer and dopant of claim 1 and adding to the

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copolymerization solution in one step (simultaneously, concurrently). Claims 7 and 20 are drawn to a two step procedure involving the monomer and the dopant of claim 1 wherein a sol-gel polymeric oxide with a fractal macromolecular structure is the final product. Claim 8 defines the monomer and the dopant of claim 1 within art recognized classes. Claim 9 provides a spacial relationship between the monomer and the dopant of claim 8. Claim 10 defines the identity of the dopant of claim 6 and articulates the radical's spacial relationship in the sol-gel following the one step set forth in claim 6. Claim 11 defines the shapes for the porous catalytic materials (supports) of claim 1. Claim 13 is drawn to a process for the liquid phase oxidative conversion of a substrate of a primary or secondary alcohol into a carbonyl or carboxyl derivative by using the material described in claim 1, however the claim does not provide any added limitations to the process of claim 1. Claims 14-17 and 21 all depend from claim 13 which is not seen to further limit the method of claim 1 as currently drafted. Claim 18 is a product by process. Claim 19 is drawn to a further delimiting of the variable "P", which is seen to lack antecedent basis.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

#### **Determining the scope and contents of the prior art**

The Avnir et al. Patent discloses doped sol-gel glasses. Note the disclosure of sol-gel technology in column 1, line 42 through column 2, line 60 and column 6, EXAMPLES A. Preparation of doped "sol-gel" glasses, wherein Avnir et al. discloses the steps for preparing a doped sol-gel. Solvent mixtures (water and alcohol), copolymerization with acid or base, drying

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techniques for the gel, organic additives and process variations are all addressed within the text of the sections disclosed herein for the Avnir et al. Patent.

Clearly Avnir et al. envision the inclusion of any organic compound or stable organic radical in an individual cage of the expected fractal macromolecular structure of sol-gel compositions, see column 2, lines 49-60. Avnir et al. discloses expected classes of components to obtain a copolymerized solution for preparation of the doped sol-gel product expected, see column 6, lines 9-48 and more specifically, claim 1 in column 10, which sets forth a process for preparing a doped sol-gel comprising:

a) copolymerizing a solution

(Solution comprising at least one monomer which is metal or semi-metal alkoxides, a dopant, a solvent, an acid or base to Catalyze the copolymerization, any other additives useful in preparation of porous materials) ;

b) evaporating the solvent (removing the solvent) ;

c) drying said gel.

The subsequent steps and motivation to perform same as claimed by applicant for using the sol-gel to coat a support are indeed provided for in the prior art and would be expected to provide a reasonable expectation of success, said steps including:

d) coating a porous material (support) with said sol-gel ; and

e) drying said col-gel onto a porous material (support) are disclosed in Avnir et al, see column 5, lines 57-68. Avnir et al. does not specifically disclose the use of a nitroxyl-containing or nitroxyl precursor containing dopant as part of the process, however, it does not disclaim any potential organic radicals known to be used in sol-gel technology. The product of the Avnir et al. Patent does indeed render the product of claim 18 as instantly claimed prima facie obvious.

The Matsui et al. Reference discloses the use of TEMPOL, a potential nitroxyl precursor radical containing doping agent used as a probe to measure organic molecular trapping of organic molecules in the preparation and testing of doped sol-gel glasses. The measurement of a sol-gel

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doped with nitroxide radicals is verified via ESR. Matsui's nitroxide is seen to provide sufficient evidence that it is known in the art of doped sol-gel preparation to use nitroxide or nitroxyl precursors as applicants claim.

**Ascertaining the differences between the prior art and the claims at issue**

The difference between that which is claimed and that which is disclosed in the prior art is seen to be the specific identity of the monomer, the nitroxyl radical or precursor. The application of the sol-gel prepared in Avnir et al. as a coating to some support or surface is also taught in the prior art, but the specific monomer, dopant and surface or support to be coated are not the same as those instantly claimed.

**Resolving the level of ordinary skill in the pertinent art**

It would have been obvious to one having ordinary skill in this art at the time the invention was made to preparing a reactive sol gel catalytic porous material doped with stable organic nitroxyl radicals or precursors thereof comprising:

a) copolymerizing a solution

(Solution comprising at least one monomer which is metal or semi-metal alkoxides, a dopant, a solvent, an acid or base to Catalyze the copolymerization, any other additives useful in preparation of porous materials) ;

b) evaporating the solvent (removing the solvent) ;

c) drying said gel ;

d) coating a porous material (support) with said sol-gel ; and

e) drying said col-gel onto a porous material (support), because the Avnir et al. Patent discloses each and every methodological step, or an equivalent readily recognized by the skilled artisan in this field, in the preparation of a doped sol-gel coated material. Limitations drawn to the identity of metals used in the monomer, the manner in which the copolymerizing solutions components are mixed and drying conditions are all seen to be within the purview of the skilled artisan, resulting in

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differences which do not materially affect the operability of the prior art steps for preparing a doped sol-gel coated material. Matsui et al. clearly provides that nitroxyl precursors are known to be included in sol-gel preparations.

**Considering objective evidence present in the application indicating obviousness or nonobviousness**

The examiner notes that there is not seen to be provided and disclosures of unexpected results or any additional secondary considerations which might provide evidence of non-obviousness of the instantly claimed process or product by process. Now that the general reaction has been shown to be old, applicant now bears the burden of providing reason or authority which would substantiate the assertions that some reactive conditions involving the starting materials would take part in or affect the basic reaction and thus alter the nature of the product or the operability of the process and thus the unobviousness of the method for producing it.

Applicant's arguments with respect to claims 1-2, 4-11 and 18-20 have been considered but are moot in view of the new ground(s) of rejection, as the Avnir et al. Patent is recited above and applied differently than in the original office action in view of it's combination with Matsui et al. disclosure.

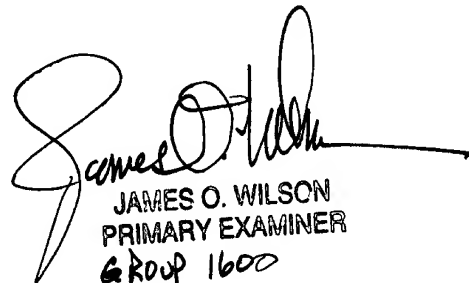
Any inquiry concerning this communication or earlier communications from the examiner should be directed to James O. Wilson, Primary Examiner in Art Unit 1623 whose telephone number is (703) 308-4624. The examiner can normally be reached on Monday-Friday from 10:00am to 5:00pm.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter, can be reached on (703) 308-4532. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4556.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1235.



JAMES O. WILSON  
PRIMARY EXAMINER  
GROUP 1600